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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,528

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Saito Shinichiro

NAKAI-005US

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EXAMINER

MCKENZIE, THOMAS B

ART UNIT

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4172

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/537,528	Applicant(s) SHINICHIRO ET AL.	
	Examiner THOMAS BENNETT MCKENZIE	Art Unit 4172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/27/05</u> . | 6) <input type="checkbox"/> Other: ____. |

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Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1, 3-5, 7-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hegemann et al (U.S. 4,052,042), hereafter referred to as '042, in view of Heijwegen et al (U.S. 4,854,946), hereafter referred to as '946.

Regarding **claim 1**, '042 substantially teaches an air bleed means (2) for bleeding a kiln exhaust gas passage (1), which runs from an end of a cement kiln to a bottom cyclone (4b), of a part of a combustion gas (Figure 1, parts 2 and 3), a separating means (4) for separating dust in the gas bled by the air bleed means into coarse and fine particles (Figure 1, part 4). '042 does not explicitly teach a wet dust collector for collecting dust from the gas containing the fine particles separated by the separating means.

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However, in an analogous art of treating exhaust gas, '946 teaches a wet dust collector (column 3, lines 15-16) for collecting dust from the gas containing the fine particles separated by the separating means (Column 2, lines 13-21; column 2, lines 67-68; column 3, lines 1-2). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the '946 wet dust collector with the '042 apparatus as an equivalent separating means. Note that neither '042 nor '946 specifically teach a cement kiln chlorine/sulfur bypass system per se. However it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the systems described in '042 and '946 for use in any conventional system, including a cement kiln chlorine/sulfur bypass system.

Regarding **claim 3**, '042 sufficiently teaches a bypass system where in a separating means includes a cyclone in which inlet gas velocity is changeable (column 5, lines 39-43). Note that although '042 does not explicitly teach the inlet gas being changeable, it does teach a detector for a pressure valve (column 5, lines 35-36). Gas pressure and velocity are related. When the detector for a pressure valve measures a change in pressure, it also detects a change in gas velocity, implying that gas velocity is changeable. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the bypass system described in '042 as a cement kiln chlorine/sulfur bypass system.

Regarding **claim 4**, '946 sufficiently teaches a bypass system wherein a wet dust collector is a mixing scrubber (column 3, line 15). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the mixing scrubber described

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in '946 with the apparatus described in '042 in a cement kiln chlorine/sulfur bypass system as described in **claim 1** above.

Regarding **claim 5**, '946 teaches a bypass system wherein a mixing scrubber comprises a circulating liquid tank to which dust slurry collected by the mixing scrubber is supplied and a circulating system by which a part of the dust slurry in the circulating liquid tank is returned to the mixing scrubber (column 2, lines 13-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system described in '946 with the apparatus described in '042 in a cement kiln chlorine/sulfur bypass system as described in **claim 1** above.

Regarding **claim 7**, '042 teaches a method of bleeding an exhaust gas passage, which runs from an end of a kiln to a bottom cyclone (figure 1, part 2), of a part of the combustion gas. However, '042 does not teach a method for separating coarse particles in dust in the bled gas or collecting dust from the gas containing fine particles by a wet dust collector with a solvent.

In an analogous art of treating exhaust gas, '946 substantially teaches a method of treating a combustion gas comprising separating coarse particles in dust in the bled gas (column 2, lines 16-17) and collecting dust from the gas containing fine particles by a wet dust collector with a solvent (column 2, lines 20-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the '946 method of separating coarse particles and collecting dust with the '042 method of bleeding the exhaust gas passage. Note that neither '946 nor '042 specifically teach a cement kiln chlorine/sulfur bypass system per se. However it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to combine the systems described in '042 and '946 for use in a cement kiln chlorine/sulfur bypass system.

Regarding **claim 8**, '946 substantially teaches the method of treating combustion gas exhausted from a cement kiln wherein at least a part of said dust slurry collected by the wet dust collector is added to a cement mill system (column 2, lines 50-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system described in '946 with the method described in '042 in a cement kiln chlorine/sulfur bypass system as outlined in **claim 7** above.

Regarding **claim 9**, '946 substantially teaches the method of treating combustion gas exhausted from a cement kiln wherein said dust slurry collected by the wet dust collector is separated into solid and liquid, and a desalted dust cake is added to a cement mill system (column 2, line 50-54). Note that the desalted dust cake returned to the kiln is the coarse grain fraction. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system described in '946 with the method described in '042 in a cement kiln chlorine/sulfur bypass system as outlined in **claim 7** above.

Regarding **claim 10**, '946 substantially teaches the method of treating combustion gas exhausted from a cement kiln wherein said dust slurry collected by the wet dust collector is separated into solid and liquid, and at least a part of separated brine is added to a cement mill system (column 3, lines 58-62). Note that the portion of brine returned to the kiln is the fraction of the bottom flows that is "agglomerated and used as feed for blast furnaces" (column 3, lines 61-62). It would have been obvious

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to one of ordinary skill in the art at the time the invention was made to use the system described in '946 with the method described in '042 in a cement kiln chlorine/sulfur bypass system as outlined in **claim 7** above.

Regarding **claim 11**, '946 substantially teaches the method of treating combustion gas exhausted from a cement kiln wherein said dust slurry collected by the wet dust collector is separated into solid and liquid; separated brine is desalted in salt recovery process to recover industry salt; and treated water after desalting is utilized again as washing water for washing after the solid/liquid separation or/and water for collection at the wet dust collector (column 3, lines 28-30). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system described in '946 with the method described in '042 in a cement kiln chlorine/sulfur bypass system as outlined in **claim 7** above.

4. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over '946 in view of Dahlstrom (U.S. 2,760,635), hereafter referred to as '635.

Regarding **claim 2**, '946 teaches a bypass system wherein a separating means includes a classifier in which cut size is changeable (column 2, lines 20-21). However '946 does not explicitly teach how a hydrocyclone operates.

In an analogous art of '946, '635 teaches that the cut size of a hydrocyclone is changeable (column 4, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the hydrocyclone of '635 as the hydrocyclone of '946. Note that in order for sharper separation to be realized, cut size must be changeable. Note also that neither '946 nor '635 teach a cement kiln

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chlorine/sulfur bypass system. However it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system described in '946 with a cement kiln chlorine/sulfur bypass system.

5. **Claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over '042 in view of '946 as applied to **claim 5 above**, in further view of Herrlander (U.S. 4,472,181), hereafter referred to as '181.

Regarding **claim 6**, the previous art combination does not teach a sulfuric acid supplier.

In an analogous art of treating cement kiln exhaust gas '181 teaches a bypass system comprising a sulfuric acid supplier for supplying sulfuric acid to a circulating liquid tank (column 6, lines 52-56; figure 1, part 12). Note that although a sulfuric acid supplier is not explicitly mentioned in '181, it is implied since the pH of the biotower could be adjusted by adding sulfuric acid (column 6, lines 55-56). A sulfuric acid supplier is implicit as it would be necessary to perform this step. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include an acid supplier as claimed in view of '181, in the previous combination, for the benefit of supplying sulfuric acid to the circulating liquid tank.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS BENNETT MCKENZIE whose telephone

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number is (571) 270-5327. The examiner can normally be reached on Monday-Thursday 7:30AM-5:00PM Alt. Friday 7:30AM-4:00PM EST..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ANGELA ORTIZ can be reached on (571) 272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

tm

***/Angela Ortiz/
Supervisory Patent Examiner, Art Unit 4172***